

## TITLE OF THE INVENTION

### TELEPHONE NUMBER SEARCHING SYSTEM SUPPORTING AUTOMATIC TELEPHONE CONNECTION AND METHOD THEREFOR

## CROSS-REFERENCE TO RELATED APPLICATIONS

- 5            This application claims the benefit of Korean Application No. 97-55564, filed October 28, 1997, in the Korean Patent Office, the disclosure of which is incorporated herein by reference.

## BACKGROUND OF THE INVENTION

### 1.     Field of the Invention

10           The present invention relates to an internet service providing system and a method therefor, and more particularly, to a telephone number searching system using an internet and a method therefor.

### 2.     Description of the Related Art

15           With increasing use of the internet, various services are being offered on the internet. Telephone directories are also being provided through internet information services. It is economical to use this service since people can obtain desired telephone number information without referring to a telephone number directory book or calling a telephone number inquiry center. Also, it is convenient since various kinds of additional information which are not provided by the telephone number  
20           directory service can be obtained.

            FIG. 1 is a flowchart showing a conventional telephone number searching method through the internet.

            When a user wishes to know the telephone number of a specific person or company, the user connects to a web server which provides a telephone number  
25           service using a web browser (step 100). When the web browser is connected to the web server, the user inputs the name of the person or company (step 110). When the name of the person or company to be searched is input, the search engine

searches concerned information from a telephone directory database and transfers searched information to the web browser in a hypertext markup language (HTML) document format (steps 120 and 130). When there are a plurality of searched results in the transferred information, the user searches the specifically desired information by using additional information such as a detailed address, an E-mail address, and so on (step 140). After searching the desired information, the user terminates the internet connection and makes a phone call using the searched telephone number information (step 150).

When the telephone number service is provided on a conventional web server, the user must terminate the Internet connection and directly dial the number obtained through the search to make a phone call. However, if the obtained number is erroneous and the user wishes to search for another number, the user must connect again to the internet.

#### SUMMARY OF THE INVENTION

To solve the above problem, an object of the present invention is to provide a telephone number searching system supporting an automatic telephone connection in which a telephone number is searched through the internet and automatically dialed.

Another object of the present invention is to provide a telephone number searching method for searching for a telephone number and then automatically dialing the searched for number through the internet.

Additional objects and advantages of the invention will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the invention.

In the telephone number searching system to achieve the above and other objects of the present invention, a web server is connected to a telephone number database for storing multiple predetermined telephone numbers. An information terminal is equipped with a web browser which is selectively connected to the web server for submitting a search request to receive a telephone number service and searching for a telephone number from the telephone number database to display at

least one searched for telephone number. One number is selected by a user among the displayed telephone numbers and dialed automatically by a telephone plug-in to set up a communication channel through the telephone.

The above and other objects of the present invention are achieved by providing a telephone number searching method supporting automatic dialing, including the steps of: (a) connecting a web browser to a telephone web server; (b) inputting a search word to be searched to the web server; (c) displaying a result searched by the web server; and (d) selecting one telephone number from the result displayed in said step (c) and operating a telephone plug-in to dial the selected telephone number automatically.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects and advantages of the present invention will become more apparent by describing in detail a preferred embodiment thereof with reference to the attached drawings in which:

FIG. 1 is a flowchart showing a conventional telephone number searching method through the internet;

FIG. 2 is a block diagram showing the structure of a telephone number searching system supporting an automatic telephone connection according to an embodiment of the present invention;

FIG. 3 is a flowchart describing a telephone searching method according to the embodiment of the present invention;

FIG. 4 shows an example of a screen for inputting a search context in the web server home page of FIG. 2;

FIG. 5 shows an example of an HTML document transferred by the web server in the system shown in FIG. 2; and

FIG. 6 shows an example of a screen displayed on a user's web browser in the system shown in FIG. 2, in which the searched telephone number is displayed.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference will now made in detail to the present preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout. The  
5      embodiments are described below in order to explain the present invention by referring to the figures.

FIG. 2 shows a telephone number searching system which includes a user's information terminal equipped with a web browser 200 (hereinafter, referred to simply as a web browser), a web server 210, a telephone directory database 220 in which  
10      predetermined telephone numbers are stored, a telephone plug-in 230 for connecting a telephone to the telephone number searched for in the telephone book database 220, and a telephone 240 connected to the telephone plug-in 230, according to an embodiment of the present invention.

FIG. 3 is a flowchart describing a telephone number searching method  
15      according to the embodiment of the present invention which supports an automatic telephone connection.

The flowchart shown in FIG. 3 includes the steps of connecting to the telephone web server using the web browser (step 300), inputting the name of a person or company to be searched in the home page of the web server (step 310),  
20      searching for the name of the person or company input to the web server from the telephone directory database and transferring the results of the search as an HTML document (step 320), displaying the HTML document (step 330), selecting a link the user desires from the displayed HTML document (step 340), determining whether the link selected by the user is described by "dialto" (step 350), operating a telephone  
25      plug-in if the link selected by the user is "dialto" (step 360), making a telephone call manually if the link selected by the user is not "dialto" (step 370), and automatically making a phone call (step 380) if the telephone plug-in is operated in step 360.

FIG. 4 shows an example of a screen for inputting a search request in the web server home page of FIG. 2, FIG. 5 shows an example of an HTML document  
30      transferred by the web server in the system shown in FIG. 2, and FIG. 6 shows an

example of a screen displayed on a user's web browser, in which the searched for telephone number is displayed, in the system shown in FIG. 2.

The present invention will be described in detail with reference to FIGs. 2 through 6.

5 When a user wishes to make a phone call upon searching the telephone number of a counterpart, the user browses the web server 210 through the internet using the web browser 200 (step 300). When the connection to the telephone web server 210 is completed by the web browser 200, a search screen of the telephone number web server 210 is displayed on the web browser 200. FIG. 4 shows an  
10 example of a search screen provided by the web server 210 so that the user inputs the proper search requests. In the present embodiment, the search screen includes two windows for inputting the name of a person or company and an address, and an additional window for inputting a keyword such as an E-mail address optionally.

The user inputs the name of the person or company to be searched for in the  
15 telephone directory database 220 and the address or the keyword thereof, and clicks a search button (step 310). The example of FIG. 4 shows that the name and the address are input to search for the telephone number of John Doe, living in Washington, D.C.

When the information to be searched for is input to the home page of the web  
20 server 210 and the search button is clicked, the web server 210 searches for the telephone numbers stored in the telephone number database 220 of all the John Does living in Washington, D.C., and transfers the searched results as an HTML document (step 320). FIG. 5 shows an example of the HTML document transferred by the web server 210 as a result of the search.

25 The transferred HTML document is displayed on the screen of the user (step 330). FIG. 6 shows an example of a screen displayed on the user's web browser 200. Here, the telephone numbers of all the people having the name "John Doe" and living in Washington, D.C. are displayed on the screen.

After checking the searched results, the user selects a desired link from the  
30 screen (step 340). For example, the user may select the telephone number 555-

5124 of John Doe living at 1233 20th St., N.W., Washington, D.C., which is the second of the three links displayed on the screen.

5 In step 350, the web browser 200 determines whether the link selected by the user is expressed by <dialto>. Here, <dialto> is a tag defined by the writer of the HTML document. That is, in the present invention, the link syntax for executing an automatic dialing is described by "<dialto> telephone number </dialto>." When a link described in such a syntax is selected by the user, the telephone plug-in 230 operates and dials a corresponding phone number automatically (step 360). Here, the telephone plug-in 230 is an apparatus or software for automatically connecting a  
10 telephone according to the searched for telephone number. In other words, an automatic dialing operation carries out a program, i.e., a dialing routine, which receives the telephone number from the web browser 200 and automatically dials the number.

15 The telephone plug-in 230 connects to the telephone 240 with the selected telephone number using the same telephone line as that used to connect the information terminal with web browser 200 to the web server 210. That is, the information terminal with web browser 200 is not connected to the web server 210 while the telephone plug-in 230 is in use. Thus, the internet connection between the information terminal with the web browser 200 and the web server 210 is  
20 disconnected while the telephone plug-in 230 operates and dials a corresponding telephone number automatically and connects the telephone with the selected telephone number (step 380).

25 If the selected telephone number is not the desired telephone number, the information terminal with web browser 200 automatically reestablishes the connection with the web server 210 so that the user may select another one of the telephone numbers which was retrieved as a result of the search.

However, if a second separate telephone line is available, the telephone plug-in 230 may be operated using the second telephone line while the information terminal with web browser 200 is connected to the web server 210 using the first

telephone line. As a result, the use of a second telephone line is optional according to the present invention.

It can be seen that the telephone numbers shown in FIG. 5 are all defined by the automatic dialing syntax. Therefore, all the telephone numbers can be dialed automatically. Since the user selected the second link, which is defined as "<dialto> 555-5124 </dialto>", the number 5555124 is dialed automatically. After the number is automatically dialed, the call channel is set up (step 380).

On the other hand, when the link selected by the user is not defined by <dialto> in step 350, the user has to make a phone call manually (step 370). Thus, the user searches the desired number among the telephone numbers displayed on the screen shown in FIG. 6, and makes a phone call by directly dialing the number.

The user may disconnect from the internet and make a telephone call manually and his telephone call can be made on the same telephone line as that used to connect to the internet.

As mentioned above, since the telephone number searched for by the user with the internet is automatically dialed and is connected to the telephone according to the present invention, the present invention provides convenience to the user.

In the embodiment of the present invention described above, the user's equipment, including the web browser 200, the telephone plug-in 230 and the telephone 240, may be implemented by a personal computer and a general purpose telephone. However, in an alternative embodiment of the present invention, the user's equipment may be implemented by a web phone or a hand-held phone which supports a web browser.

Although the present invention has been described in detail above, it should be understood that the foregoing description is illustrative and not restrictive. Those of ordinary skill in the art will appreciate that many obvious modifications can be made to the invention without departing from its spirit or essential characteristics. Accordingly, the scope of the invention should be interpreted in the light of the following appended claims.